

## CURRICULUM VITAE

**Gary T. Barnes, Ph.D.**

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### PERSONAL

Date & Place of Birth: [-----]

Marital Status: [-----]

Business Address: Department of Radiology  
UAB Hospital, G301  
619 South 19th Street  
Birmingham, Alabama 35249-6830

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### EDUCATION

Undergraduate: B.S., Physics, Case Institute of Technology, Cleveland, Ohio, [-----]

Postgraduate: Ph.D., Physics, Wayne State University, Detroit, Michigan, [-----]  
Dissertation: Positron Annihilation in Plutonium

Postdoctoral: Trainee in Medical Physics, University of Wisconsin, Madison,  
Wisconsin, [-----]

### CERTIFICATIONS

Radiological Physics, American Board of Radiology, [---]

### HONORS

NDEA Fellow, Wayne State University, [-----]

Fellow, American Association of Physicists in Medicine, 1988

Fellow, American College of Radiology, 1995

1982 SEAAPM Annual Award for the Outstanding Publication, "Radiographic Mottle: A Comprehensive Theory"

Annual Distinguished Faculty Award, 1980-81, 1985-1986;

1994 SEAAPM Annual Award for Outstanding Publication, "Normalized Average Glandular Dose in Mo Target - Rh Filter and Rh Target - Rh Filter Mammography", Wu X, Gingold EL, Barnes GT, Tucker DM

1996 NCRP Robert D. Mosely, Jr. Award for Radiation Protection in Medicine, "Contrast and Dose in Mo-Mo, Mo-Rh and Rh-Rh Target - Filter Combinations in Mammography", Gingold EL, Wu X, Barnes GT

Fellow, American Institute for Medical and Biological Engineering, 2005

2005 AAPM Coolidge Award for Outstanding Contributions to Medical Physics

#### ACADEMIC AND ADMINISTRATIVE POSITIONS

Department of Radiology, University of Alabama at Birmingham, School of Medicine

Professor Emeritus, 2002-Present

Professor, 1981- 2001

Associate Professor, 1976-1981

Assistant Professor, 1972-1976

Director, Physics and Engineering Division, 1987-2001

Director, Physics Division, 1976-1987

X-Ray Imaging Innovations, LLC

Founder and President, 1998-Present

Department of Radiology and Medical Physics, University of Wisconsin

Postdoctoral Trainee in Medical Physics, 1971-72

Office of Grants and Contracts, Wayne State University

Administrative Assistant, 1971

Department of Physics, Wayne State University

Research Assistant, 1968-71

Teaching Assistant, 1965

#### PROFESSIONAL AND SCIENTIFIC SOCIETIES

American Association of Physicists in Medicine (AAPM)

American College of Radiology (ACR)

Association of University Radiologists (AUR)

Health Physics Society (HPS)

Radiological Society of North America (RSNA)

Society of Breast Imaging (SBI)

Society of Computer Applications in Radiology (SCAR)

#### NATIONAL APPOINTMENTS

American Association of Physicists in Medicine

Training of Radiologist Committee, 1977-79; Finance Committee, 1978-80

Diagnostic X-Ray Imaging Committee, 1980-84; Chairman, 1981-84

Science Council, 1981- 86; Chairman, 1985-86

Board of Directors, 1981-83; 1987-89; Chairman 1989

Associate Editor, **MEDICAL PHYSICS**, 1982-87, 2002-Present

Executive Committee, 1987-89

President, 1988

Nominating Committee, 1988 and 1990, Chairman 1988

NEMA Representative, X-Ray Imaging, 1990-2002

Publications Committee, 1990-1993

Accreditation Commission, 1991-1995, Chairman, 1992-1995

Co-Director, 1991 AAPM Summer School

Program Committee, 1994-2000

**NATIONAL APPOINTMENTS (Cont.)**

American Board of Radiology

Guest Examiner - Oral Boards, 1981-85, 87-89, 91-93, 95-98, 1999-2001, 2003-2005  
Physics Advisory Committee, 1985-91  
Physics Exam Committee, 1985-2003  
Chairman, Diagnostic Radiological Physics Exam Subcommittee, 1989-91  
Chairman, Radiological Physics Clinical Exam Committee, 1998-2003

American College of Radiology

Commission on Education

Learning Laboratory Physics Accession Committee, 1979-83  
Committee on Continuing Evaluation in PG Education, 1987-92  
Equipment Commission, Committee on Purchase and Acceptance Specifications, 1981-86  
Physics Commission

Committee on Education, 1982-86  
Committee on Standards, 1993-2000  
Chairman, Committee on Technology Assessment, 2001-2003  
At Large Member, 2001-Present

Commission on Standards and Accreditation

Committee on Quality Assurance, 1988-1994  
Mammography Phantom and Clinical Imaging Assessment Subcommittee, 1991-Present

Radiological Society of North America

Editorial Advisory Board, **RADIOLOGY**, 1980-1994  
Scientific Program Committee, 1980-82  
Associated Sciences Committee, 1982-86  
Strategic Planning Committee, 1985-86  
Electronic Communications Committee, 1986-91  
Third Vice President, 1992

National Institutes of Health (NIH), Division of Research Grants

Diagnostic Radiology Study Section  
Ad Hoc Reviewer, 1988-91  
Member, 1991-93

**REGIONAL AND STATE APPOINTMENTS**

Southeastern Chapter, American Association of Physicists in Medicine (AAPM)

Executive Committee, 1978-81  
President, 1979-80

Alabama Chapter, Health Physics Society

Executive Committee, 1980-83  
President, 1981-82

Alabama Department of Health

Member, Radiation Advisory Board, 1991-1997

#### UAB COMMITTEE APPOINTMENTS

Radioisotope and Radiation Safety Committee, 1976- Present; Chairman, 1999-Present  
Subcommittee for Human Use, 1976- Present; Chairman, 1999- Present  
Subcommittee to Review Radiation Exposure, 1985-1998; Chairman, 1985-1998  
  
Radioactive Drug Research Committee, 1976- Present; Chairman, 1999- Present

#### PUBLICATIONS

1. Gustafson DR, Barnes GT: Effect of magnetic field orientation on positron annihilation in potassium. *Phys Rev Letters* 18:3-5, 1967.
2. Barnes GT, Gustafson DR: Positron annihilation in plutonium, pp 271-278 in Plutonium 1970 and Other Actinides, edited by WN Miner, The Metallurgical Society AIME, Inc., New York, 1970.
3. Gustafson DR, Barnes GT: Investigation of self-irradiation damage to plutonium. *J Nucl Materials* 48:79-85, 1973.
4. Barnes GT, Witten DM: Film/screen considerations in tomography. *Radiology* 113:477-479, 1974.
5. Barnes GT, Cleare HM, Brezovich IA: Improvement of contrast and/or reduction of patient exposure in diagnostic radiology by means of a scanning multiple slit assembly, pp 791-796, in Operational Health Physics, Proceedings of the Ninth Midyear Topical Symposium of the Health Physics Society held in Denver, CO, February 9-12, 1976, edited by PL Carson, WR Hendee and DC Hunt.
6. Barnes GT, Brezovich IA: The intensity of scattered radiation in mammography. *Physics in Canada* 32:25.2, 1976.
7. Barnes GT, Cleare HM, Brezovich IA: Reduction of scatter in diagnostic radiology by means of a scanning multiple slit assembly. *Radiology* 120:691-694, 1976.
8. Barnes GT: The dependence of radiographic mottle on beam quality. *Am J Roentgenol* 127:819-824, 1976.
9. Barnes GT, Nelson RE, Witten DM: A comprehensive quality assurance program - A report of four years' experience at the University of Alabama at Birmingham. *Optical Instrumentation in Medicine V*, Proc. of the SPIE 96:19-25, 1976.
10. Barnes GT, Brezovich IA, Witten DM: The scanning multiple slit assembly: A practical and efficient device to reduce scatter. *Am J Roentgenol* 129:497-501, 1977.
11. Nelson RE, Barnes GT, Witten DM: An economic analysis of a quality assurance program. *Radiol Technol* 49:129-134, 1977.
12. Brezovich IA, Barnes GT: A new kind of grid. *Med Phys* 4:451-453, 1977.
13. Barnes GT, Brezovich IA: Contrast - The effect of scatter, pp 73-81 in Breast Carcinoma - The Radiologist's Expanded Role, edited by WW Logan, John Wiley & Sons, Inc., New York, 1977.
14. Brezovich IA, Barnes GT: The effect of electron evaporation on x-ray tube current. *Optical Instrumentation in Medicine VI*, Proc. of the SPIE 127:175-179, 1977
15. Yester MV, Barnes GT: Geometrical limitations of computed tomography (CT) scanner resolution. *Optical Instrumentation in Medicine VI*, Proc. of the SPIE 127:296-303, 1977.

**PUBLICATIONS (Cont.)**

16. Barnes GT, Brezovich IA: The intensity of scattered radiation in mammography. *Radiology* 126:243-247, 1978.
17. Barnes GT, Yester MV, King MA: Optimizing computed tomography (CT) scanner geometry. *Optical Instrumentation in Medicine VII, Proc. of the SPIE* 173:225-237, 1979.
18. Barnes GT, Brezovich IA: The design and performance of a scanning multiple slit assembly. *Med Phys* 6:197-204, 1979.
19. Barnes GT: Characteristics of scatter, pp 223-242 in Reduced Dose Mammography, edited by WW Logan and EP Muntz, Masson Publishing USA, Inc., New York, 1979.
20. King MA, Barnes GT, Yester MV: A mammographic scanning slit assembly: Design considerations and preliminary results, pp 243-252 in Reduced Dose Mammography, edited by WW Logan and EP Muntz, Masson Publishing USA, Inc., New York, 1979.
21. Barnes GT: The use of bar pattern test objects in accessing the resolution of film/screen systems, pp 138-151 in The Physics of Imaging: Recording System Measurements and Techniques, edited by AK Haus, American Institute of Physics, New York, 1979.
22. Barnes GT: Imaging system considerations in conventional thin section tomography, pp 483-491 in The Physics of Imaging: Recording System Measurements and Techniques, edited by AK Haus, American Institute of Physics, New York, 1979.
23. Wagner RF, Barnes GT, Askins BS: Effect of reduced scatter on radiographic information content and patient exposure: A quantitative demonstration. *Med Phys* 7:13-18, 1980.
24. Brezovich IA, Barnes GT: An investigation and explanation of the fall-off of x-ray tube current during an exposure. *Phys Med Biol* 25:241-249, 1980.
25. Barnes GT, Moreland RF, Yester MV, Witten DM: The scanning grid: A novel and effective bucky movement. *Radiology* 135:765-767, 1980
26. Barnes GT: Principles of slit radiography, pp 123-132 in Optimization of Chest Radiography, Proceedings of a Symposium held in Madison, WI, April 30-May 2, 1979, edited by JR Cameron, AJ Alter and JF Wochos, U. S. Department of Health and Human Services Publication: (FDA) 80-8124, 1980.
27. Wagner LK, Haus AG, Barnes GT, Bencomo JA, Amtey SR: Comparison of methods used to measure the characteristic curve of radiographic screen/film systems. *Optical Instrumentation in Medicine VII, Proc. of the SPIE* 233:7-10, 1980.
28. Barnes GT, McDanal W: When is inhouse service cost effective? *Optical Instrumentation in Medicine VIII, Proc. of the SPIE* 233:286-290, 1980.
29. Yester MV, Barnes GT, King MA: Kilovoltage bootstrap sensitometry. *Radiology* 136:785-786, 1980.
30. Barnes GT, Moreland RF, Yester MV: Exposure in reduction in medical radiography utilizing a scanning grid, pp 307-313, in Medical Health Physics, Proceedings of the Fourteenth Midyear Topical Symposium of the Health Physics Society held in Hyannis, Mass, December 8-12, 1980, edited by TG Martin and KW Price.
31. Yester MV, Barnes GT, King MA: Experimental measurements of the scatter reduction obtained in mammography with a scanning multiple slit assembly. *Med Phys* 8:155-162, 1981.
32. Barnes GT, Moreland RF: A linear tomographic alignment test object. *Radiology* 141:247-249, 1981
33. Mattson RA, Sones RA, Stickney JB, Tesic MM, Barnes GT: The design and physical characteristics of a digital chest unit. *Digital Radiography, Proc. of the SPIE* 314:160-163, 1981.

**PUBLICATIONS (Cont.)**

34. Barnes GT, Tishler JM: Fluoroscopic Image Quality and Its Implications Regarding Equipment Selection and Use. Chapter 8, pp 93-106, in The Physical Basis of Medical Imaging, edited by CM Coulam, JJ Erickson, AE James and FD Rollo, Appleton-Century-Crofts, New York, 1981.
35. Barnes GT, Witten DM: Image quality - An education and scientific problem. *Radiology* 143:277, 1982.
36. Barnes GT: Radiographic mottle - A comprehensive theory. *Med Phys* 9:656-667, 1982.
37. Barnes GT, Chakraborty DP: Radiographic mottle - A comparison of theoretical and experimental results, pp 19.16, Proceedings of the Fourth World Congress on Medical Physics and Biomedical Engineering held in Hamburg, West Germany, September 5-11, 1982.
38. Barnes GT, Chakraborty DP: Radiographic mottle and patient exposure in mammography. *Radiology* 145:815-821, 1982.
39. King MA, Barnes GT: Exposure uniformity considerations in slit radiography. *Med Phys* 10:4-9, 1983.
40. Barnes GT: Quality assurance - Current trends in the U. S., pp. 691-712, Proceedings of the 39th General Assembly of the Japanese Society of Radiological Technology, held in Osaka, Japan, April 1-4, 1983.
41. Wagner LK, Barnes GT, Bencomo JA, Haus AG: An examination of errors in characteristic curve measurements of radiographic screen/film systems. *Med Phys* 10:365-369, 1983.
42. Fraser RF, Breatnach E, Barnes GT: Digital radiography of the chest: Clinical experience with a prototype unit. *Radiology* 148:1-5, 1983.
43. Tesic MM, Mattson RA, Barnes GT, Sones RA, Stickney JB: Digital radiography of the chest: Design features and considerations for a prototype unit. *Radiology* 148:259-264, 1983.
44. Barnes GT: Quality assurance - Current trends in the U. S. *Jpn J Radiol Technol* 9:748-759, 1983.
45. Chakraborty DP, Barnes GT: Signal-to-noise ratio considerations in radiographic imaging. *Med Phys* 10:467-469, 1983.
46. Chakraborty DP, Yester MV, Barnes GT, Lakshminarayanan AV: Self-masking subtraction tomosynthesis. *Radiology* 150:225-229, 1984.
47. Sones RA, Barnes GT: A method to measure the MTF of digital x-ray systems. *Med Phys* 11:166-171, 1984.
48. Hendee WR, Barnes GT, Boyd DP, et al: New imaging technologies. *Invest Radiol* 19:S84-93, 1984.
49. Barnes GT, Sones RA, Tesic MM: Digital chest radiography: Performance evaluation of a prototype unit. *Radiology* 154:801-806, 1985.
50. Daniel WW, Barnes GT, Nasca RJ, Annegan DC: Segmented field radiography in scoliosis. *AJR* 144:325-329, 1985.
51. Barnes GT: Noise analysis of radiographic imaging, pp 16-38 in , edited by K Doi, L Lanzl, and PP Lin, American Institute of Physics, New York, 1985.
52. Barnes GT, Sones RA, Tesic MM: Image quality evaluation of the Picker digital chest radiographic system, pp 309-324 in Recent Developments in Digital Imaging, edited by K Doi, L Lanzl, and PP Lin, American Institute of Physics, New York, 1985.
53. Fraser RG, Breatnach E, Barnes GT: Digital radiography of the chest: Clinical experience with a prototype unit. *Radiographics* 5:415-428, 1985.

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54. Barnes GT, Sones RA, Tesic MM, Morgan DR, Sanders JN: Detector for dual-energy digital radiography. *Radiology* 156:537-540, 1985.
55. Niklason LT, Barnes GT, Rubin E: Mammography phototimer technique chart. *Radiology* 157:539-540, 1985.
56. Chakraborty DP, Gupta KL, Barnes GT, Vitek JJ: Digital subtraction angiography apparatus. *Radiology* 157:547, 1985.
57. Chakraborty DP, Breatnach ES, Yester MV, Soto B, Barnes GT, Fraser RG: Digital and conventional chest imaging: A modified ROC study of observer performance using simulated nodules. *Radiology* 158:35-39, 1986.
58. Fraser RG, Barnes GT, Hickey N, et al: Potential value of digital radiography: Preliminary observations on the use of dual-energy subtraction in the evaluation of pulmonary nodules. *Chest* 89(4):249S-252S, 1986.
59. Barnes GT: Regression methods for problems of identification in the health sciences, pp 588 -590 in Multiple Regression Analysis: Applications in the Health Sciences, edited by DE Herbert and RH Myers, American Institute of Physics, New York, 1986.
60. Rothenberg L, Barnes GT: Mammography and medical physics. *Physics Today* 39(1):S45-46, 1986.
61. Niklason LT, Hickey NM, Chakraborty DP, Sabbagh EA, Yester MV, Fraser RG, Barnes GT: Simulated pulmonary nodules: Detection with dual-energy digital versus conventional radiography. *Radiology* 160:589-593, 1986.
62. Fraser RG, Hickey NM, Niklason LT, Sabbagh EA, Luna RF, Alexander CB, Robinson CA, Katzenstein AA, Barnes GT: Calcification in pulmonary nodules: Detection with dual-energy digital radiography. *Radiology* 160:595-601, 1986.
63. Fraser RG, Barnes GT: Digital radiography of the chest: Experience with a prototype scanning slit unit, pp 103-120 in Recent Advances in Radiology and Medical Imaging, edited by RE Steiner and T Sherwood, Churchill Livingstone Inc., New York, 1986.
64. Hickey NM, Niklason LT, Sabbagh E, Fraser RG, Barnes GT: Dual-energy digital radiographic quantification of calcium in simulated pulmonary nodules. *AJR* 148:19-24, 1987.
65. Sones RA, Tesic MM, Barnes GT: Dual-energy chest radiography. *Physics Today* 40(1):S44-S45, 1987.
66. Fraser RG, Barnes GT, Hickey NM, Sabbagh EA, Niklason LT, Chakraborty DP: Scanned projection digital radiography of the chest: a review of five years' experience. *Alabama Journal of Medical Sciences* 24(3):258-266, 1987.
67. Sanders C, Frank MS, Rostand SG, Rutsky EA, Barnes GT, Fraser RG: Metastatic calcification of the heart and lungs in endstage renal disease: detection and quantification by dual-energy digital chest radiography. *AJR* 149:881-887, 1987.
68. Morgan DR, Sones RA, Barnes GT: Performance characteristics of a dual-energy detector for digital scan projection radiography. *Med Phys* 14:728-735, 1987.
69. Friedman SE, Dubovsky E, Dubovsky J, Alexander CB, Robinson CA, Sabbagh E, Barnes GT, Fraser RG: Mineral content of bone: Measurement by energy subtraction digital chest radiography. *AJR* 149:1199-1202, 1987.
70. Barnes GT: Radiology: Scatter Control in Image Recording, Chapter 4, vol. 1, pp 1-18 in Radiology, edited by JM Taveras and JT Ferrucci, JB Lippincott Co., Philadelphia, PA 1987.

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71. Sanders C, Fraser RG, Barnes GT: Refinements needed to produce an ideal digital chest system. *Diagnostic Imaging*, 137-144, January 1988.
72. LaFrance R, Gelskey DE, Barnes GT: A circuit modification that improves mammographic phototimer performance. *Radiology* 166:773-776, 1988.
73. Barnes GT: <<Lettura>> radio-biologica dell' immagine mammografica, Chapter 5, pp 81-95; in Presupposti tecnico-biologici: all' immagine mammografica, edited by GF Pistolessi and M Tonegutti, Edizioni Libreria Cortina Verona, Verona, Italy, 1988.
74. Barnes GT: Sintesi delle esigenze qualitative in mammografia , Chapter 11, pp 207-228, in Presupposti tecnico-biologici: all' immagine mammografica, edited by GF Pistolessi and M Tonegutti, Edizioni Libreria Cortina Verona, Verona, Italy, 1988.
75. Barnes GT: Electronic imaging systems for chest radiography: An overview. pp 178-193, in Proceedings of the 1987 Chest Imaging Conference, edited by WW.Peppler and AA Alter, Medical Physics Publishing Company, Madison, WI, 1988.
76. Fraser RG, Alexander B, Barnes, GT, et al: Scanned projection digital radiography of the chest: A review of five years' experience. pp 242-248, Proceedings of the 1987 Chest Imaging Conference, edited by WW Peppler and AA Alter, Medical Physics Publishing Company, Madison, WI, 1988.
77. Barnes GT, Lakshminarayanan AV: Computed Tomography: Physical Principles and Image Quality Considerations, Chapter 1, pp 1-21 in Computed Body Tomography, edited by JKT Lee, RJ Stanley, and SS Sagel, Raven Press, New York, 1989.
78. Chakraborty DP, Barnes GT: An energy sensitive cassette for dual-energy mammography. *Med Phys* 16:7-13, 1989.
79. Fraser RG, Sanders C, Barnes, GT, MacMahon H, Giger ML, Doi K, Templeton AW, Cox GG, Dwyer III SJ, Meritt CRB, Jones JP: Digital imaging of the chest. *Radiology* 171:297-307, 1989.
80. Barnes GT, Sabbagh EA, Chakraborty DP, Nath PH, Luna RF, Sanders C, Fraser RG: A comparison of dual-energy digital radiography and screen-film imaging in the detection of subtle interstitial pulmonary disease. *Investigative Radiology* 24:585-591, 1989.
81. Barnes GT, Lauro K: Image processing in digital radiography: Basic concepts and applications. *Journal of Digital Imaging* 2:132-146, 1989.
82. Sones RA, Barnes GT: Noise correlations in images acquired simultaneously with a dual-energy sandwich detector. *Med Phys* 16:858-861, 1989.
83. Wu X, Barnes GT, Tucker DM: Monte Carlo simulation and glandular tissue doses in mammography, pp 758-764 in SCAR '90-Computer Applications to Assist Radiology, edited by RL Arenson and RM Friedenbergl, Symposia Foundation, Carlsbad, California, 1990.
84. Barnes GT, Lauro K: Image Processing: Basic Concepts and Terminology, pp 177-197 in Computers in Medical Physics, edited by AR Benedetto, American Institute of Physics, New York, 1990.
85. Barnes GT: Contrast and scatter in x-ray imaging. *Radiographics* 11:307-323, 1991.
86. Wu X, Barnes GT, Tucker DM: Spectral dependence of glandular tissue dose in screen-film mammography. *Radiology* 179:143-148, 1991.

**PUBLICATIONS (Cont.)**

87. Tucker DM, Barnes GT, Chakraborty DP: A semiempirical model for generating tungsten target x-ray spectra. Med Phys 18:211-218, 1991.
88. Tucker DM, Barnes GT, Wu X: Molybdenum target x-ray spectra: A semiempirical model. Med Phys 18:402-407, 1991.
89. Barnes, GT: Tube potential, focal spot, radiation output and HVL measurements on screen-film mammography units, pp 67-113 in Screen-Film Mammography: Imaging Considerations and Medical Physics Responsibilities, edited by GT Barnes and GD Frey, Medical Physics Publishing Company, Madison, WI, 1991.
90. Barnes GT, Frey GD: Mammography acceptance testing and quality control documentation and reports, pp 203-219 in Screen-Film Mammography: Imaging Considerations and Medical Physics Responsibilities, edited by GT Barnes and GD.Frey, Medical Physics Publishing Company, Madison, WI 1991.
91. Wagner AJ, Barnes GT, Wu X: Assessing fluoroscopic contrast resolution: A practical and quantitative test tool. Med Phys 18:894-899, 1991.
92. Chakraborty DP, Barnes GT: Bone mineral densitometry with x-ray and radionuclide sources: A theoretical comparison. Med Phys 18:978-984, 1991.
93. Hendrick RE, Barnes GT: Mammography. APS News 1:52-54, 1992.
94. Nelson RE, Stears JG, Barnes GT, Gray JE: Acceptance testing radiologic systems: Experience in testing 129 imaging systems at two major medical facilities. Radiology 183:563-567, 1992.
95. Barnes GT, Morin RL, Staab EV: Teleradiology: Fundamental considerations and clinical applications, pp 139-146 in Computers for Clinical Practice and Education in Radiology, edited by JC Honeyman and EV Staab, Special Course Syllabus, Radiological Society of North America, Oak Brook, IL, 1992.
96. Barnes GT: Mammography equipment: Compression, scatter control, and automatic exposure control, pp 59-68 in Technical Aspects of Breast Imaging, edited by AG Haus and MJ Yaffee, Categorical Course Syllabus, Radiological Society of North America, Oak Brook, IL 1992; pp 73-82 in the Second Edition, 1993; and pp 75-84 in the Third Edition, 1994.
97. Barnes GT: Meeting the clinical needs in fluoroscopy: the UAB Experience. Proceedings of the ACR/FDA Workshop on Fluoroscopy, Washington, D.C., pp 163-164, October 16-17, 1992.
98. Tucker DM, Souto M, Barnes GT: Scatter in computed radiography. Radiology 188:271-274, 1993.
99. Barnes GT, Morin RL, Staab EV: Teleradiology: Fundamental considerations and clinical applications. Radiographics 13:673-681, 1993.
100. Barnes GT: Digital x-ray image capture with image intensifier and storage phosphor plates: Imaging principles, performance and limitations, pp 23-48 in Digital Imaging, edited by WR Hendee and JH Trueblood, Medical Physics Publishing Co., Madison, WI, 1993.
101. Barnes GT, Wu X, Wagner AJ: Scanning slit mammography. Scanning slit mammography 19: 7-12, 1993.
102. Barnes GT, Wu X, Sanders PC: Scanning slit chest radiography: a practical and efficient scatter control design. Radiology 190:525-528, 1994.
103. Barnes GT, Hendrick RE: Mammography accreditation and equipment performance. Radiographics 14:129-138, 1994.
104. Gauntt DM, Barnes GT: X-ray tube potential, filtration and detector considerations in dual-energy chest radiography. Med Phys 21:203-218, 1994.

**PUBLICATIONS (Cont.)**

105. Souto M, Malagari KS, Tucker D, Tahoces PG, Correa J, Benakis VS, Roussos C, Strigaris KA, Vidal JJ, Barnes GT, Fraser RG: Digital radiography of the chest: state of the art. *Eur Radiol* 4: 281-297, 1994.
106. Gingold EL, Tucker DM, Barnes GT: Computed Radiography: User-Programmable Features and Capabilities. *J Digit Imaging* 7:113-122, 1994.
107. Wu X, Gingold EL, Barnes GT, Tucker DM: Normalized Average Glandular Dose in Molybdenum Target-Rhodium Filter and Rhodium Target-Rhodium Filter Mammography. *Radiology* 193:83-89, 1994.
108. Barnes GT: Specification of Diagnostic X-ray Imaging Equipment and the Bid Process, pp 11-32 in Specification, Acceptance Testing and Quality Control of Diagnostic X-ray Imaging Equipment, edited by JA Seibert, GT Barnes and RG Gould, American Institute of Physics, New York, 1994.
109. Correa J, Souto M, Tahoces PG, Malagari KS, Tucker DM, Larkin JJ, Kuhlman J, Barnes GT, Zerhouni EA, Fraser RG, Vidal JJ: Digital Chest Radiography: Comparison of Unprocessed and Processed Images in the Detection of Solitary Pulmonary Nodules. *Radiology* 195:253-258, 1995.
110. Gingold EL, Wu X, Barnes GT: Contrast and Dose with Mo-Mo, Mo-Rh, and Rh-Rh Target-Filter Combinations in Mammography. *Radiology* 195:639-644, 1995.
111. Tucker DM, Barnes GT, Koehler RE: Picture Archiving Communication Systems in the Intensive Care Unit. *Radiology* 196:297-304, 1995.
112. Tang S, Barnes GT, Tanner RL: Slit Camera Focal Spot Measurement Errors in Mammography. *Med Phy* 22:1803-1814, 1995.
113. Poletti ME, deAlmeida A, Rezentes PS, Junck KL, Barnes GT: Performance of mammography grid, pp 1-3. *Physica Medica*, Vol XIII, N. 1. January-March 1997.
114. Barnes GT: Optimizing Mammography System Performance, pp 543-564, in The Expanding Role of Medical Physics and Diagnostic Imaging, edited by GD Frey and P Sprawls, Advanced Medical Publishing, Madison, WI, 1997.
115. Barnes GT, Lakshminarayanan AV: Conventional and Spiral Computed Tomography; Physical Principles and Image Quality Considerations; pp 1-20; in Computed Body Tomography with MRI Correlation, edited by JKT Lee, SS Sagel, RJ Stanley and JP Heiken, Lippincott-Raven Publishers, Philadelphia, PA. 1998.
116. Bass WB Jr, Barnes GT: Medical Center Personnel Monitoring: Operational Considerations, pp 23-27, in Good Practices in Health Physics, edited by GR Komp and MA Thompson, Medical Physics Publishing, Madison, WI, 1998.
117. Rezentes PS, deAlmeida A, Barnes GT: Mammography Grid Performance. *Radiology* 210:227-232, 1999.
118. Singh S, Royal S, Hedlund G, Barnes G: Central Venous Catheter Motion in Children: A pitfall in Catheter Localization on Chest Radiography. *AJR* 172:803-808, 1999.
119. deAlmeida A, Sobol WT, Barnes GT: Characterization of the reciprocity law failure in three mammography screen-film systems. *Med Phy* 26(5):682-688, 1999.
120. Barnes GT, Johnson TK: Point/Couterpoint; Medical physics graduate programs should focus on education and research and leave clinical training to residencies; moderator, Hendee WR. *Med Phys* 26(10):2051-2053, October 1999.
121. Barnes GT: Film Processor Performance Audits and Common Problems, pp.107-114, in Advances in Film Processing Systems Technology and Quality Control, edited by AG Haus, Medical Physics Publishing, Madison WI, 2001.

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122. Barnes GT: Mammography Equipment and Screen-Film Imaging Considerations, Chapter 2, pp 31-41, in Diagnosis of Diseases of the Breast, 2nd Ed, edited by LW Bassett, VP Jackson, YS Fu & K Fu, W.C. Saunders Co., Philadelphia PA, 2004.
123. Barnes GT: Common and Less Common Problems Found during Screen-Film MQSA Physics Performance Audits, pp 61-74 in Advances in Breast Imaging: Physics, Technology, and Clinical Applications, edited by A Karellas and ME Giger, Categorical Course Syllabus, Radiological Society of North America, Oak Brook, IL 2004.
124. Banerjee K, Barnes GT: Point/Counterpoint; Offering the physics exam to residents early in their residency is helpful to residents and the radiology department; moderator, Hendee WR. Med Phys 32(10):3063-3066, October 2005.

**BOOKS AND REPORTS**

1. Dubovsky EV, Barnes GT, Beschi RJ, Logic JR, Russell CD, Sims JC and Tobin M: Nuclear Medicine Technology Continuing Education Review, Medical Examination Publishing Co., Inc., Flushing, New York, 1976.
2. Barnes GT: Basic Atomic and Nuclear Physics. Chapter 2, pp10-19; Detectors and Instrumentation. Chapter 3, pp. 20-29; Imaging. Chapter 4, pp 30-44; Dosimetry. Chapter 5, pp 45-57; in Nuclear Medicine Technology Continuing Education Review, edited by E. V. Dubovsky, Medical Examination Publishing Co., Inc., Garden City, New York, 1981 (Second Edition).
3. Barnes GT: Contributing Editor, Medical Physics Data Book - (NBS Handbook 138) edited by T. W. Padikal and S. P. Fivozinsky. U. S., Government Printing Office, Washington, D.C. \ Issued March 1982.
4. Yaffee MJ, Barnes GT, Conway BJ, et al: Equipment Requirements and Quality Control for Mammography. AAPM Report No. 29, American Institute of Physics, New York, 1990.
5. Barnes GT and Frey GD, editors, Screen-Film Mammography: Imaging Considerations and Medical Physics Responsibilities, Medical Physics Publishing Company, Madison, Wisconsin, 1991.
6. Seibert JA, Barnes GT and Gould RG, editors, Specification, Acceptance Testing and Quality Control of Diagnostic X-ray Imaging Equipment, American Institute of Physics, New York, 1994.

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1. Barnes GT: Method and Apparatus for Reduction of Scatter in Diagnostic Radiology. U. S. Patent No. 4,096,391. Issued June 20, 1978.
2. Barnes GT: Multiple Beam Computed Tomography (CT) Scanner. U. S. Patent No. 4,315,157. Issued February 9, 1982.
3. Barnes GT: Scanning Grid Apparatus for Suppressing Scatter in Radiographic Imaging. U.S. Patent No. 4,340,818. Issued June 20, 1982.
4. Barnes GT: Split Energy Level Radiation Detection. U.S. Patent No. 4,626,688. Issued December 2, 1986.
5. Sones RA, Lauro KL, Barnes GT, Tesic MM: Substance Quantification in Animal Bodies. U.S. Patent No. 4,837,686. Issued June 6, 1989.
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7. Barnes GT: Scanning Radiographic Device with Slit, Slot and Grid. U.S. Patent No. 5,418,832. Issued May 23, 1995.

8. Barnes GT, Gauntt DM: High Ratio, High Efficiency Mammography Grid System. U.S. Patent No. 6,625,253. Issued September 23, 2003.
9. Barnes GT, Gauntt DM: Mobile Radiographic System and Process. U.S. Patent No. 6,702,459. Issued March 9, 2004.
10. Barnes GT, Gauntt DM: High Ratio High Efficiency General Radiography Grid System. U.S. Patent No. 6,795,529. Issued September 21, 2004

#### **SCIENTIFIC EXHIBITS**

1. Barnes GT, Witten DM, Kahler JG: Imaging Considerations for Improved Thin Section Tomography. Exhibited at 1) The 60th Scientific Assembly and Annual Meeting of the Radiological Society of North America, November 30-December 5, 1974, Chicago, Illinois; 2) The 76th Annual Meeting of the American Roentgen Ray Society, September 30-October 3, 1975, Atlanta, GA. Received an Honorable Mention by the ARRS Awards Committee.
2. Barnes GT, Witten DM, Rouse V: The Scanning Multiple Slit Assembly (SMSA): An Effective and Practical Method of Reducing Scatter. Exhibited at the 63rd Scientific Assembly and Annual Meeting of the Radiological Society of North America, November 26-December 2, 1977.
3. Tonkin AK, Hogg DE, Barnes GT, Yester MV, King MA: Minimum Dose Mammography: Clinical Application of the Scanning Multiple Slit Assembly (SMSA). Exhibited at 1) The 64th Scientific Assembly and Annual Meeting of the Radiological Society of North America, November 26-December 1, 1978, Chicago, Illinois; 2) The 21st Annual Meeting of the American Association of Physicists in Medicine, July 29-August 2, 1979, Atlanta, GA. Received a Certificate of Merit Citation by the RSNA Awards Committee.
4. Daniel WW, Barnes GT, Nasca RJ: Segmented Field Radiography in Scoliosis. Exhibited at the 17th Annual Meeting of the Scoliosis Research Society, September 22-25, 1982, Denver, CO.
5. Fraser RG, Barnes GT, Breatnach E: Digital Radiography of the Chest - Experience with a Prototype Unit. Exhibited at 1) The 68th Scientific Assembly and Annual Meeting of the Radiological Society of North America, November 28-December 3, 1982; 2) The 83rd Annual Radiological Society of North America, November 28-December 3, 1982. Received a Certificate of Merit Citation by the RSNA Awards Committee.
6. Daniel WW, Barnes GT, Nasca RJ, Annegan DC: Scoliosis Imaging: Improved Quality with Further Decrease in Irradiation. Exhibited at the 50th Annual Meeting of the American Academy of Orthopedic Surgeons, March 10-15, 1983, Anaheim, California.
7. Daniel WW, Barnes GT, Nasca RJ, Annegan DC: Segmented Field Radiography in Scoliosis. Exhibited at 1) The 69th Scientific Assembly and Annual Meeting of the Radiological Society of North America, November 13-18, 1983, Chicago, IL. Received an Honorable Mention by the RSNA Awards Committee; 2) The 84th Annual Meeting of the American Roentgen Ray Society, April 9-13, 1984, Las Vegas, NE. Received a Certificate of Appreciation by the ARRS Awards Committee.
8. Barnes GT, Malcolm RJ, Daniel WW, Rubin E, Han SY: Scatter Free Mammography. Exhibited at the 69th Scientific Assembly and Annual Meeting of the Radiological Society of North America, November 13-18, 1983, Chicago, IL.

9. Barnes GT, Moreland RF, Henley FT, Kilgore EP: Reduced Dose Xeroradiography. Exhibited at the 69th Scientific Assembly and Annual Meeting of the Radiological Society of North America, November 13-18, 1983, Chicago, IL.
10. Fraser RG, Hickey N, Barnes GT, Niklason LT: Dual-Energy Subtraction in Digital Radiography of the Chest: A Study of Pulmonary Nodules. Exhibited at the 85th Annual Meeting of the American Roentgen Ray Society, April 21-26, 1985, Boston, Massachusetts. Received a Certificate of Appreciation from the ARRS Awards Committee.
11. Fraser RG, Hickey N, Niklason LT, Barnes GT: Dual-Energy Subtraction in Digital Radiography of the Chest: Measurement of Calcium in Pulmonary Nodules. Exhibited at 1) The 71st Scientific Assembly and Annual Meeting of the Radiological Society of North America, November 17-22, 1985, Chicago, IL. Received a Cum Laude Award from the RSNA Scientific Exhibit Committee. 2) The 86th Annual Meeting of the American Roentgen Ray Society, April 13-18, 1986, Washington, D.C. Received a Silver Medal from the ARRS Awards Committee.
12. Fraser RG, Barnes GT, Sabbagh E: Dual-Energy Scanned Projection Digital Radiography of the Chest: An Overview of 5 Years Experience. Exhibited at the 72nd Scientific Assembly and Annual Meeting of the Radiological Society of North America, November 30-December 5, 1986, Chicago, IL. Received a Magnum Cum Laude Award from the RSNA Scientific Exhibit Committee.
13. Niklason LT, Barnes GT, Carson P: Accurate Alignment Device for Portable Radiography. Exhibited at the 75th Scientific Assembly and Annual Meeting of the Radiological Society of North America, November 26-December 1, 1989, Chicago, Illinois.
14. Barnes GT, Wu X, Wagner AJ, Rubin E: Scatter Control in Mammography: Past, Present, and Future. Exhibited at the 75th Scientific Assembly and Annual Meeting of the Radiological Society of North America, November 26-December 1, 1989, Chicago, IL. Received a Certificate of Merit from the RSNA Scientific Exhibit Committee.
15. Dempsey PJ, Tabar L, Barnes GT, Hendrick RE, Parker SH, Evans P. What is New in Breast Imaging? Exhibited at the 78th Scientific Assembly and Annual Meeting of the Radiological Society of North America, November 29-December 4, 1992.